

Application No.: 10/076003

Case No.: 57181US002

REMARKS

Claims 20 – 33 and 39 – 40 are pending. Claim 20 is being amended to specify that the integrated circuit (IC) comprises a thin film transistor comprising the recited layers (basis therefor being found, for example, at page 4, lines 21 – 23, and FIGS. 4 and 5), and that the patterned organic semiconductor layer is positioned between the patterned first electrode layer and the patterned second electrode layer (basis therefor being found, for example, at page 12, lines 20 – 26, and FIG. 5).

Rejections Under 35 U.S.C. § 103

Claims 20 – 22, 25 – 33, and 39 – 40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,937,272 (Tang) in view of U.S. Patent No. 6,087,196 (Sturm et al.). The rejection is traversed for the following reasons.

Applicants disclose an IC comprising a thin film transistor (TFT) comprising a deposition substrate; a patterned first electrode layer formed adjacent the deposition substrate; a second patterned electrode layer; and a patterned organic semiconductor layer positioned between the patterned first electrode layer and the patterned second electrode layer, wherein the patterned first electrode layer, the patterned organic semiconductor layer, and the second patterned electrode layer are each defined by a repositionable aperture mask, and wherein one of the patterned first electrode layer and the patterned second electrode layer defines source and drain electrodes, and one of the patterned first electrode layer and the patterned second electrode layer defines a gate electrode.

Tang discloses a method of forming organic electroluminescent (EL) displays comprising vapor depositing green, blue, and red organic EL medium through an aperture mask (see, for example, claims 1, 5, and 15, and col. 3, line 50, through col. 6, line 15). Tang also discloses an upper electrode 62 and an anode bottom electrode 72.

Tang does not appear to teach or suggest an IC comprising a TFT comprising a patterned organic layer positioned between a patterned source and drain electrode layer and a patterned gate electrode layer. The only TFTs Tang appears to disclose are TFTs 44, 48. Tang does not appear to provide any description of these TFTs. In addition, Tang does not appear to teach or suggest

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patterned electrode layers (that is, patterned source/drain electrode layers or patterned gate electrode layers).

Sturm discloses methods of fabricating organic light emitting diodes (OLEDs) and field effect transistors including applying source and drain electrodes by evaporation through shadow masks and ink-jet printing luminescent polymer films. Sturm does not appear to teach or suggest TFTs at all. In addition, Sturm does not appear to teach or suggest patterned gate electrodes. The only references to a gate electrode layer in Sturm are at col. 6, lines 55 – 56, and in claim 23.

Therefore, neither Tang nor Sturm appear to teach or suggest a TFT comprising a patterned organic layer positioned between a patterned source and drain electrode layer and a patterned gate electrode layer.

TFTs implementing organic semiconductors are generally constructed so that the organic semiconductor layer is deposited as a “top” layer (see, for example, FIG. 4 of the present application) because organic semiconductors typically cannot be etched or lithographically patterned without damaging or degrading the performance of the organic semiconductor material. For instance, morphological changes can occur in an organic semiconductor layer upon exposure to processing solvents. The configuration of the present invention is advantageous because depositing appropriate source and drain electrodes on the organic semiconductor provides low-resistance interfaces. The configuration of the present invention can also promote improved growth of the organic semiconductor layer by allowing the organic semiconductor layer to be deposited over the relatively flat surface of a dielectric layer, as opposed to being deposited over a non-continuous layer. For example, if the organic semiconductor layer is deposited over a non-flat surface, growth can be inhibited. Thus to avoid inhibited organic semiconductor growth and high resistance interfaces, the configuration of the invention can be desirable. (See, for example, page 13, lines 5 – 27, of the present application.)

Claims 20 – 22, 25 – 33, and 39 – 40 are therefore unobvious and patentable over the combination of Tang and Sturm, and Applicants respectfully request that the rejection under § 103(a) be withdrawn.

Claims 23 – 24 have also been rejected under 35 U.S.C. § 103(a) as being unpatentable Tang in view of Sturm. The rejection is traversed.

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For at least the reasons given above, claims 23 and 24 are unobvious and patentable over the combination of Tang and Sturm. Applicants therefore respectfully request that the rejection of claims 23 and 24 under § 103(a) be withdrawn.

Concluding Remarks

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is respectfully requested.

Respectfully submitted,

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